SCHOLAR ARCHITECT 2021

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TRANSLATED BY Florina TUFESCU

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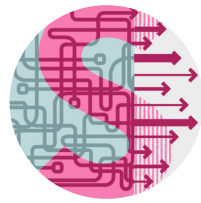

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The Institutional Development Fund, Domain 5: Improving the quality of teaching, including the observance of professional and academic ethics

Reflections on the desiderata of contemporary architecture, with implications for trends in architectural education, for the manner of improving the curriculum and the teaching methods and for the adaptation of spaces for high-quality architectural education.

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A few reflections on the desiderata of contemporary architecture

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The subject I intend to discuss in this chapter is how we can simultaneously approach concepts like architecture, technology, social interaction and pedagogy in a perfect symbiosis, a symbiosis that will constantly evolve in accordance with social needs and practices.

The problems and needs of contemporary society change constantly and thus the traditional university curriculum must invariably adapt to correspond to the present. Education has become an engine of social development, which means that the ensemble of formative methods requires institutional coordination and structuring, especially when it comes to architectural education.

The manner of conceiving and designing a building is undergoing constant change. The architect must fulfil new requirements and possess a high level of technical and organisational skills; the buildings must fulfil an increasing number of desiderata: in addition to the traditional requirements related to aesthetics, resistance and functional durability, there are requirements related to efficiency, competitiveness and energy performance.

A single individual can no longer possess and control all these types of data which, correlated with the data derived from usage criteria and with management criteria, lead us to a new approach: that of multidisciplinary teams of specialists from the relevant fields, coordinated by an architect. This leads to the necessity of training students to work in a team, either by exercising these abilities in some of their university projects or by participating in workshops, roundtables or other extracurricular activities. The complex and topical problems that confront the student architect embarked on research for their project represent a contextual study full of questions, doubts and contradictions that are specific to such a complex and permanently alive organism as urbanity at the beginning of the XXIst century. The intention is to prepare, both theoretically and through practical applications in projects, for the

requirements of subsequent actual investments made by public, private or mixed entities by providing a methodology for launching the process of turning an idea into an architectural object, from setting up a team of specialists to choosing the site, establishing the design brief for the given location, establishing the criteria for the approach, conducting a comparative analysis of feasibility studies, up to supervising the construction work and including the post-construction follow-up modalities (feedback).

When there is a change in the way architecture is perceived, the fundamentals of the profession are also changed. At present, the types of activities that take place within buildings can be modified and they undergo constant change; programmes are accumulated and become increasingly complex or tend towards simplification, all of which constantly places the architect in front of new situations, leaving no time for them to experiment and to perfect their gradually acquired knowledge. As a consequence of the general evolution, we witness a change of philosophy, for example in the acceptance of the idea of constant change, of the study of border fields, of relative truths and of the new attitude with regard to values (the acceptance of values originating in different cultures, the renewed discussion of human needs) and we also observe the renewed attention to human beings, to the beneficiaries or users of architecture. Architecture tends towards the resolution of the problems of communities, of collectives, towards the acceptance of cultural differences and of different tastes; it reinstates the importance of human emotions and perceptions. The constant redefining of architectural themes and programmes, in line with ever changing necessities, is a desideratum of contemporary architectural education; to fulfil it, we must have solid knowledge of the past and use it as a constant source of inspiration in order to envisage the future. It is necessary to understand the different spaces – on the historical, geographical or conceptual level – via different approaches; over the course of the academic trajectory, some landmark moments, the great trials and successes, are captured as they appear in the uninterrupted metamorphoses of architectural space.

Architecture satisfies increasingly complex human needs that stem from a constantly changing way of life – let us consider only how much our life has changed as a result of the pandemic that spread in 2020; architectural programmes as an expression of the human also undergo continuous change. The building, or the space that contains these programmes, must also reflect change. Those who attempt to make predictions about the future look primarily at the latest trends, with implications for the way of thinking about and designing buildings or architectural spaces, from the following directions: user, technology, sustainability/ environmental issues, architectural expression.

There are fewer and fewer certainties in the transformation process of contemporary architecture; one of these is that the transformation of architecture is due to technological progress, to the new materials and technologies used in the construction field. Mastery of technological progress is one of the touchstones of today's architect; the

speed at which changes unfold is obvious all over the world; over only thirty years, the technologically advanced buildings that began as isolated, contested or neglected experiments have become ubiquitous and increasingly complex. Design-specific problems are influenced by the technological evolution; the building materials and techniques known at any given historical point have influenced the building structure of architectural spaces, interdependently with requirements of a practical, aesthetic, social or representational nature, generating mutations of planimetric forms and volumes. These types of spaces appear, are maintained, disappear or return in reinterpreted formulae. Modern technologies contribute to the level of physical comfort in modern buildings via installations, air conditioning, the use of IT and of advanced technology in the control, monitoring and management of buildings; at present, science and computerised technology enable the control of the acoustics and sound equipment in minute detail, with the modelling of different scenarios (fully occupied or empty hall, spoken sound, singing, instrumental music). The buildings of the future are smart buildings, programmed to self-manage. Technical solutions that are reflected in the creation of desired or sought psychological sensations, in the quality of perception distributed by zones, in acoustic control, in the limitation of openings or in the modification of the dimensions of partitions and of the air volume can be mentioned in turn.

Technological progress remains one of the few certainties in the evolution of construction science: the fact that today we build more quickly and easily than in the past. High-tech architecture begins and evolves alongside the technology of the means of production and scientific progress in general. It is a consequence of the need to solve practical problems: the large openings of interior spaces uninterrupted by structural elements, the speed of erecting buildings, lowered costs, easy maintenance, etc. Thus, we observe the transition, over the space of a century, from an architecture limited by formal and building constraints to a stage of boundless freedom, materialised in a wide range of possibilities at the level of architectural expression.

Environmental problems are, at present, one of humanity's sources of pessimism. They have emerged precisely from the human longing and striving for the better, from the continuous struggle to dominate nature, yet what we call progress today proves to be a dangerous path. So where is architecture headed from this perspective? New trends and attitudes emerged in the 80s, after the oil crisis, as a consequence of the environmental protection issues linked to the economisation of materials, the reduction of energy consumption, to recycling and the increased attention to the problem of waste, etc. Energy consumption and maintenance costs are now discussed already at the project stage. At present, all activity sectors, including architecture, must be sustainable and take into account the long-term consequences and environmental impact.

A number of avant-garde ideas arising from completed projects and from architectural studies and competitions are examples that highlight different approaches in contemporary buildings as well as architectural

trends (variable capacity, flexibility with regard to various aspects, architectural expression studied in relation to the urban context). There is a noticeable tendency to reconsider established patterns by formulating proposals suited to contemporary directions of development and to the social, economic and technological realities. Everything is seen from a restructuring perspective, with a constant return to terms such as:

_processes of sustainable development

_cultural networks, community, social inclusion

_variability and the capacity to adapt over time

_simplification of space and equipment, reduced to the essential

_reduction of investment and exploitation costs

_intensive exploitation of space.

The shaping of the programme and theme can be materialised in: functional schemes, functional modules, models of space allocation in accordance with the elements of interest in the field, with a view to the planning of buildings that have a reasonable price and aspect and that are flexible and functional for the entire day, allowing all users to pursue their activities in optimal fashion. By assimilating the complex forms of digital culture in the most accelerated fashion, the building reassembles its own panoply of means of artistic expression. A screen can mean the extension of space, the opening to a new series of universes.

This entire riveting search, which captures the plurality of means and of the issues raised, is the current and future basis of the educational process in architecture. Current theories on the necessity of dematerialising the concrete architectural spaces are launched precisely for the purpose of achieving the superposition of spiritual and material space, which can best be imagined in the transposition of the ideal architectural teaching space.

The creation of an adequate educational environment which stimulates learning and emphasises the intercultural and inclusive dimension in the context of contemporary society is one of the prerequisites of student development. Aspects of contemporary society such as globalisation, digitisation and the growth of the creative sector as well as the growth of innovation also require the rethinking of educational spaces.

The concept of school, albeit under different shapes, modelled by the socio-cultural context of its emergence, has remained essentially the same over thousands of years and designates a group of people who meet for educational purposes. Since the relationship between society and education has always been one of interdependence, the study of social needs will identify the correct mechanism for the functioning of education, based on the models and answers provided by predecessors, according to the following brief historical summary. From the training of apprentices for the completion of work (the scriptoriums of ancient Egypt) to the coaching of youth in sports competitions (Greek antiquity), from philosophical discussions between highly cultured people to

instructive discussions with children, from the informal teaching of a small group to the mass teaching of hundreds of people at once, the concept of school has remained essentially the same – a group that listens to someone with greater knowledge of a particular field. It is the educational practices and the physical environment that change constantly. The schools established at the time of the Industrial Revolution were meant to form adults who would constitute a workforce, employed in the production or services sector, a workforce that would support the economic growth of the war-afflicted countries. They required professionals in specific fields, not thinkers. Emphasis lay on theory and on practical work that entailed following the given instructions. Many educational systems have unfortunately remained anchored to this model[1]. The innovative idea that every student is different and has their own learning style and that curiosity and the desire to learn will come naturally if the child is in an accessible and interactive environment that allows exploration is the key concept of the revolutionary pedagogical model promoted by Maria Montessori, Italian educator and psychiatrist[2] (Montessori, 1992, p. 24). Experiential learning is another approach that relies on observing and analysing a phenomenon and interpreting its consequences[3]. The process unfolds thus: practical experience – observation – comprehension – practice. Throughout this process, error is seen as a stimulus to improvement. The American psychologist John Dewey, author of the famous phrase "learning by doing", founded around 1900 the University of Chicago Laboratory Schools where the architectural space itself is an experiment: open plan, mobile partition walls, moveable blackboards and furniture. The school is practically a single space which contains all the learning activities of the school day.

Learning is practical and relies on creativity and observation instead of memorisation. In the European context, experiential learning is included in the curriculum of the Waldorf School, set up in Stuttgart in 1919 by the Austrian educator Rudolf Steiner[4]. The aim of the Waldorf School is to create a curriculum appropriate to the development of the student, which holistically integrates practical, artistic, social and academic experiences. The concept developed by the Italian educator Loris Malaguzzi at the Reggio Emilia School is learning from the other; it explores the social dimension of education. The emphasis is on the

1 Parents and teachers are obsessed with outstanding achievement in theoretical subjects, the churning-out of Olympiad students and the comparison of schools on academic results. The results can be seen on the graduation of children who are socially ill adapted, lacking respect for the environment and for others and in constant competition with others; children who are materialistic, lack aesthetic sense and sensitivity to beauty and who are incapable of being creative.

2 "... children allowed to develop according to their inner laws of development would give rise to a more peaceful and enduring civilization." Maria Montessori

3 The individual learns 10% of what they read, 20% of what they hear, 30% of what they see and 80% of what they experience (Sprouts, 2015).

4 The Waldorf School lays emphasis on activities such as painting, music, theatre, sculpture, gardening and non-competitive games. Just like in the case of the Montessori School, there are no tests or homework and moral values such as friendship and empathy are promoted instead of competition and comparing oneself to others. The students do not study for high grades, they study because they are stimulated by the curiosity to discover.

importance of teamwork and on the development of cooperative and communicative abilities through debates, argumentation and acceptance of different views within the group.

The professional creative sector is constantly growing and society needs innovative people since the future can only be imagined by creative minds. Information is very easy to access via technology and what is required is no longer its memorisation but interpretation, correlation and adaptation. Theoretical, humanist and artistic fields must have equal importance and this equilibrium must be also reflected in the architecture of educational spaces. Innovation emerges when disciplines intersect, thus the school must allow for their collaboration through flexible spaces that enable grouping, regrouping and reconfiguration.

In the pedagogical model centred on school/university students, they are treated as equals; they are involved in team activities and they learn to collaborate, to communicate and to debate different ideas, having the freedom to choose what and how to study. Emphasis lies on interaction, interdisciplinarity, teamwork or self-learning. In the architectural space of educational institutions, these are transposed into shared spaces (yard, atrium, main hall), studios and flexible and transparent classrooms, auditorium for events and intermediary spaces that enable informal learning (Hoffman, 2014). The dynamic school is a concept that proposes flexible spaces which enable movement through the effortless rearrangement of furniture for various activities, the presence of different types of seating furniture (chairs, sofas, cushions, stools, etc.), adjustable chairs and benches. All of these prevent spending too much time seated in the same position, which has a negative impact on the spine and on the ability to concentrate (OWP/P Cannon Design, 2010). In *Multiple Inteligences: New Horizons in Theory and Practice*, psychologist Howard Gardner (2006) emphasises the need to learn in one's own fashion, stating that every child develops particular abilities to a higher degree and has an individual learning style, depending on the predominant type of intelligence: visual-spatial, naturalistic, logical-mathematical, interpersonal, intrapersonal, linguistic-verbal, existential, bodily-kinaesthetic or musical. The teacher has to adapt pedagogical methods so as to cover all the students' intelligence types and the educational environment must provide opportunities for learning through different means: visual, audio, tactile materials, etc.

STEM education (Science, Technology, Engineering, Mathematics) is a method initiated in the United States in 1957, originating from the wish of becoming world leaders in this area of innovation. STEM stands for an educational concept based on teaching the four disciplines that compose it by using an interdisciplinary, practical approach, with real-life applications. Creative STEM education entails using STEM principles + Arts, thus integrating humanist and artistic fields through a holistic approach. Robotics is a relatively new discipline that is being gradually introduced into schools, at present only as extracurricular activity under the form of competitions between teams of school/university students. STEM education requires specialised spaces and equipment.

The physical framework of the educational environment must be configured so as to allow the use of these pedagogical methods and so as not to hinder, through rigid and austere architecture, the user's development from all points of view. "We shape our buildings and afterwards our buildings shape us", Winston Churchill stated and this remark remains topical. New educational directions mention concepts such as **flexibility, adaptability, variety and multifunctionality and transparency**, to cover the widest possible range of needs and activities. These translate into the possibility of reconfiguring space through using furniture in different fashions, into the possibility of combining or separating spaces with the help of mobile partition elements or simply into the possibility of conducting activities in different spaces since, as architect Rosan Bosch stated, "the most flexible thing in a room is YOU!" (TEDx Talks, 2013).

Project-based learning relies on completing projects over a longer time period during which students investigate, discover and respond to a complex problem, demand or challenge. This method leaves behind the memorisation required for traditional exams, challenging the student to formulate an individual project that they will subsequently present in a discussion with specially invited guests. The projects focus on the learning objectives of the curriculum but also on the development of abilities such as critical thinking, comprehension, problem-solving, collaboration, expression and the individual management of time and resources.

Architecture is a **discipline that evolves through the adoption of a critical attitude and through the acquirement of knowledge**. It connects disciplines, it compels the re-creation of place, context and attitude through the understanding and professional in-depth study of the data of a built future. The following types of intervention are possible and can be materialised in case studies for student projects, especially during the later years of study:

_functional rehabilitation of spaces or buildings

_functional conversion of existing buildings

_insertion of a new building on a free site, on the basis of an urban plan

_temporary spaces and interventions.

In each case, concepts such as **place, site, space, context, regionalism** must not merely be understood, but also brought up to date through practical study. The optimal solutions must be found, with an exceptionally wide register made available to those involved in providing them.

On the other hand, the large number of aspects to be considered in the configuration of educational spaces has led to the concept of universal design or "universal size for all" – a single building that is also accessible to people with disabilities and that can be adapted to as many educational activities as possible, for school/university students as well as for the community. The design incorporates three principles of flexibility: **multiple presentation methods, multiple participation options,**

multiple expression possibilities. At the level of architectural space, these translate into multifunctional spaces that enable different uses and different educational activities. The most important aspect of teaching and learning is communication; the environment must facilitate this and offer the possibility of using different means of communication. Thus, Rosan Bosch defines five concepts that describe methods of achieving communication, which she transposes to architecture:

> _unidirectional communication with a listening public – the model of the lecture hall or of traditional classes
>
> _focused and individual quiet learning, in an environment where you can see others study – various informal spaces: cubicles, organic furniture and quiet study areas
>
> _meetings, group discussions, debates in small lecture halls, tables for several people
>
> _communication from all directions, which characterises all shared spaces (corridors, halls, canteen, etc.) where the noise level is high, but there is also rapid exchange of information
>
> _communication through movement and experimentation, which entails using the body.

Space is emancipated to make room for a free and interactive learning environment. In a flexible learning environment, where the library occupies a special place, all the other spaces are arranged in such a way as to enable students and teachers to move freely and to choose the most suitable sites for the learning activities. The living room style of furniture encourages conversation and teamwork while the quiet study areas provide a space for immersion in individual study. With a rich and flexible environment at their disposal, students are no longer forced to spend the entire day at their desks. They are free to choose the space where they spend their time and they want to stay even after school to socialise, to learn together or to read because the educational environment is pleasant and stimulating.

Technology is progressively replacing the traditional teaching tools. Even if they had not been rapidly introduced as a result of the pandemic, this would have been the inevitable evolution of working methods. The blackboard and writing with chalk have been replaced by the whiteboard for writing with markers and for the use of video projections or by digitally controlled screens; lessons and lectures are replaced by multimedia material – educational videos and documentaries; textbooks are replaced by tablets that contain e-books and that can be controlled and constantly updated by the teachers[5]. Conferences on Zoom Meeting, Google Classroom, online registers, video monitoring, touchscreen interactive boards – for games and competitions with multiple-choice answers that the children select on their tablets or phones, laser cutting

5 South Korea replaced all textbooks by tablets already in 2015. Software such as Smart Sync allows teachers to control the information on the electronic smart board and on children's tablets.

equipment and 3D printers, all of these represent new didactic materials and means of communication. The STEM education mentioned above requires the acquisition of technological equipment that enables the manufacturing of robots and scientific experiments[6]. European studies show that young people spend 6-8 hours daily in front of a screen and only 40 minutes daily on printed material. The majority state that they use the internet to talk to their classmates about homework, projects and tests. So we cannot exclude technology from the current educational environment; instead, we must understand how we can best use it in the architectural teaching process, without long-term repercussions.

To conclude, a current trend for the ideal space of an institution of architectural education would be a mixture of technology, nature, comfort and versatility. Sustainability and environmental responsibility are important aspects and thus the faculty becomes a social actor, tasked with educating the community also in this respect. The knowledge assimilated by the students in the course of the learning process contributes to developing their capacity of exercising their profession, to forming their personality, to the acquisition of the required theory and of the abilities that will help the future professionals integrate and contribute to the progress of society.

Fig. 1. The hall can serve as a temporary lecture space for the Project Theory course or for workshops.

This is why the project *SCHOLAR ARCHITECT – Improving the quality of research and teaching in architectural education* proposes a series of activities that facilitate the continuous professional development of

6 The School of the Future in Philadelphia scarcely uses paper.

teaching staff in the context of online or hybrid activities; this is why it gathers objectives aimed at supporting student access to academic research resources, to webinars and workshops on various themes, anchored in the previously mentioned issues, and this is why it proposes courses and lectures on topical subjects like sustainability in architecture, digitalisation and robotics or on more general aspects of communication, presentation and documentation. The aim is to sustain high-quality teaching and research activity, at the level of contemporary trends in international architectural education and grounded in professional and academic ethics. In addition, there is a focus on optimising the specific means of learning to facilitate communication in the professional environment. Not least, the project surveys the ways in which new trends and technologies influence research, the conception process and the construction of architecture. The goal is an academic space that is high-performing from all points of view, for a sustainable future.

Fig. 2. Informal atmosphere at the opening of an international workshop – 2018.

Fig. 3. The corridor is an ideal exhibition space in a school of architecture.

Fig. 4. A large-scale workshop model – the challenge of working as part of a team.

Fig. 5. Workspace on the faculty terrace.

Fig. 6. Presentation of master plan model, also in the corridor.

Fig. 7. Studio atmosphere.

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